WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a first conductivity type semiconductor region having a main surface;

second conductivity type source/drain regions formed on said main surface of said semiconductor region to hold a channel region therebetween at a prescribed interval;

a gate electrode formed on said channel region through a gate insulator film; and

side wall insulator films formed on the side surfaces of said gate electrode, wherein

fluorine is introduced into at least any of regions extending over the junction interfaces between said first conductivity type semiconductor region and said second conductivity type source/drain regions, at least the interface between the gate insulator film and the central region of said channel region as well as said gate insulator film, and said side wall insulator films.

2. The semiconductor device according to claim 1, wherein

fluorine is introduced into said regions extending over the junction interfaces between said first conductivity type semiconductor region and said second

conductivity type source/drain regions, at least the interface between the gate insulator film and the central region of said channel region as well as said gate insulator film, and said side wall insulator films.

3. The semiconductor device according to claim 1, wherein

said first conductivity type semiconductor region includes a first conductivity type silicon region.

4. The semiconductor device according to claim 1, wherein

said side wall insulator films consist of insulator films containing Si.

5. A semiconductor device comprising:

a first conductivity type semiconductor region having a main surface; and

a second conductivity type impurity region formed on said main surface of said semiconductor region, wherein

an element of at least either fluorine or carbon is introduced into a region extending over the junction interface between said first conductivity type semiconductor region and said second conductivity type impurity region.

6. The semiconductor device according to claim 5, wherein

said impurity region includes a low-concentration impurity region and a high-concentration impurity region, and

said element of at least either fluorine or carbon is introduced into at least a region extending over the junction interface between said first conductivity type semiconductor region and said high-concentration impurity region.

7. The semiconductor device according to claim 5, further comprising:

a gate electrode formed on said main surface of said semiconductor region through a gate insulator film, and

side wall insulator films formed on the side surfaces of said gate electrode, wherein

said element of at least either fluorine or carbon is introduced also into said side wall insulator films.

8. The semiconductor device according to claim 5, wherein

said impurity region includes second conductivity type source/drain regions formed on said main surface of

said semiconductor region to hold a channel region therebetween at a prescribed interval,

said element of at least either fluorine or carbon is fluorine, and

said fluorine is introduced also into at least the interface between the gate insulator film and the central region of said channel region as well as said gate insulator film.

9. A semiconductor device comprising:

a first conductivity type semiconductor region having a main surface;

second conductivity type source/drain regions formed on said main surface of said semiconductor region to hold a channel region therebetween at a prescribed interval;

a gate electrode formed on said channel region through a gate insulator film; and

side wall insulator films formed on the side surfaces of said gate electrode, wherein

an element reducing the dielectric constant is introduced into said side wall insulator films.

10. The semiconductor device according to claim 9, wherein

said element reducing the dielectric constant

includes an element of at least either fluorine or carbon.

11. The semiconductor device according to claim 9, wherein

said side wall insulator films consist of insulator films containing Si.

12. The semiconductor device according to claim 10, wherein

said element of at least either fluorine or carbon is introduced also into regions extending over the junction interfaces between said first conductivity type semiconductor region and said second conductivity type source/drain regions.

13. A semiconductor device comprising:

a first conductivity type semiconductor region having a main surface;

second conductivity type source/drain regions formed on said main surface of said semiconductor region to hold a channel region therebetween at a prescribed interval; and

a gate electrode formed on said channel region through a gate insulator film, wherein

a halogenic element is introduced into at least the

central region of said channel region and said gate insulator film.

14. The semiconductor device according to claim 13, wherein

said halogenic element is fluorine.

15. The semiconductor device according to claim 13, wherein

said first conductivity type semiconductor region includes a first conductivity type silicon region.

16. The semiconductor device according to claim 14, further comprising side wall insulator films formed on the side surfaces of said gate electrode, wherein

said fluorine is introduced also into said side wall insulator films.

17. The semiconductor device according to claim 14, wherein

said fluorine is introduced also into regions extending over the junction interfaces between said first conductivity type semiconductor region and said second conductivity type source/drain regions.

18. A method of fabricating a semiconductor device, comprising steps of:

forming second conductivity type source/drain regions on the main surface of a first conductivity type semiconductor region to hold a channel region therebetween at a prescribed interval;

forming a gate electrode on said channel region through a gate insulator film;

forming side wall insulator films on the side surfaces of said gate electrode; and

introducing fluorine into at least any of regions extending over the junction interfaces between said first conductivity type semiconductor region and said second conductivity type source/drain regions, at least the interface between the gate insulator film and the central region of said channel region as well as said gate insulator film, and said side wall insulator films.

19. The method of fabricating a semiconductor device according to claim 18, wherein

said step of introducing fluorine includes a step of ion-implanting said fluorine into said gate electrode and thereafter performing heat treatment thereby diffusing said fluorine from said gate electrode into said side wall insulator films while diffusing said fluorine from said

gate electrode into said gate insulator film and at least the interface between the gate insulator film and the central region of said channel region.

20. The method of fabricating a semiconductor device according to claim 18, wherein

said step of introducing fluorine includes a step of ion-implanting said fluorine into said regions extending over the junction interfaces between said first conductivity type semiconductor region and said second conductivity type source/drain regions.

21. A method of fabricating a semiconductor device, comprising steps of:

forming a second conductivity type impurity region on the main surface of a first conductivity type semiconductor region; and

introducing an element of at least either fluorine or carbon into a region extending over the junction interface between said second conductivity type impurity region and said first conductivity type semiconductor region.

22. The method of fabricating a semiconductor device according to claim 21, wherein

said step of forming said second conductivity type

impurity region includes a step of forming a second conductivity type source/drain region including a low-concentration impurity region and a high-concentration impurity region, and

said step of introducing said element of at least either fluorine or carbon includes a step of introducing said element of at least either fluorine or carbon into at least a region extending over the junction interface between said first conductivity type semiconductor region and said high-concentration impurity region.

23. The method of fabricating a semiconductor device according to claim 21, wherein

said step of introducing said element of at least either fluorine or carbon includes a step of ion-implanting fluorine into said region extending over the junction interface between said second conductivity type impurity region and said first conductivity type semiconductor region at an implantation dosage of at least about 1.5×10^{15} cm^{-2} and not more than about 3×10^{15} cm^{-2}.

24. A method of fabricating a semiconductor device, comprising steps of:

forming a gate electrode on the surface of a first conductivity type semiconductor region through a gate

insulator film;

ion-implanting an element reducing the dielectric constant at least into said gate electrode;

forming side wall insulator films on the side surfaces of said gate electrode;

forming a silicon nitride film at least on said side wall insulator films; and

diffusing said element reducing the dielectric constant from said gate electrode into said side wall insulator films by heat treatment.

25. The method of fabricating a semiconductor device according to claim 24, wherein

said step of ion-implanting said element reducing the dielectric constant includes a step of implanting said element reducing the dielectric constant also into said first conductivity type semiconductor region, and

said step of diffusing said element reducing the dielectric constant from said gate electrode into said side wall insulator films includes a step of diffusing said element reducing the dielectric constant from said first conductivity type semiconductor region into said side wall insulator films by heat treatment.

26. A method of fabricating a semiconductor device,

comprising steps of:

forming a gate electrode on the main surface of a silicon substrate through a gate insulator film;

ion-implanting a halogenic element into said gate electrode; and

diffusing said halogenic element in said gate electrode into said gate insulator film and the interface between said gate insulator film and said silicon substrate by heat-treating said silicon substrate.

27. The method of fabricating a semiconductor device according to claim 26, wherein

said halogenic element is fluorine.

28. The method of fabricating a semiconductor device according to claim 26, wherein

said step of ion-implanting said halogenic element includes a step of ion-implanting said fluorine at an implantation dosage of at least about 1.5×10^{15} cm^{-2} and not more than about 5×10^{15} cm^{-2}.

29. The method of fabricating a semiconductor device according to claim 26, wherein

said heat treatment for diffusing said halogenic element is performed only once after ion implantation of

said halogenic element.

30. A method of fabricating a semiconductor device, comprising steps of:

forming a gate electrode on the main surface of a first conductivity type silicon substrate through a gate insulator film;

forming a pair of second conductivity type source/drain regions on the main surface of said silicon substrate to hold a channel region therebetween;

ion-implanting a halogenic element into said source/drain regions and said gate electrode; and

diffusing said halogenic element in said gate electrode into said gate insulator film and said channel region located on the interface between said gate insulator film and said silicon substrate while diffusing said halogenic element in said source/drain regions into said channel region located under said gate insulator film by heat-treating said silicon substrate.